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**1 [SilkRoute: A framework for publishing relational data in XML](#)**

Mary Fernández, Yana Kadiyska, Dan Suciu, Atsuyuki Morishima, Wang-Chiew Tan  
 December 2002 **ACM Transactions on Database Systems (TODS)**, Volume 27 Issue 4

**Publisher:** ACM Press

Full text available: [pdf\(687.91 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

XML is the "lingua franca" for data exchange between interenterprise applications. In this work, we describe SilkRoute, a framework for publishing relational data in XML. In SilkRoute, relational data is published in three steps: the relational tables are presented to the database administrator in a canonical XML view; the database administrator defines in the XQuery query language a public, virtual XML view over the canonical XML view; and an application formulates an XQuery query over the publ ...

**Keywords:** XML, XML storage systems, XQuery

**2 [A semantic network-based design methodology for XML documents](#)**

Ling Feng, Elizabeth Chang, Tharam Dillon  
 October 2002 **ACM Transactions on Information Systems (TOIS)**, Volume 20 Issue 4

**Publisher:** ACM Press

Full text available: [pdf\(285.64 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The eXtensible Markup Language (XML) is fast emerging as the dominant standard for describing and interchanging data among various systems and databases on the Internet. It offers the Document Type Definition (DTD) as a formalism for defining the syntax and structure of XML documents. The XML Schema definition language, as a replacement for the DTD, provides more rich facilities for defining and constraining the content of XML documents. However, it does not concentrate on the semantics that und ...

**Keywords:** XML, XML Schema, conceptual modeling, design methodology, semantic network

**3 [Document management: Consistent document engineering: formalizing type-safe consistency rules for heterogeneous repositories](#)**

Jan Scheffczyk, Uwe M. Borghoff, Peter Rödig, Lothar Schmitz

November 2003 **Proceedings of the 2003 ACM symposium on Document engineering**

**Publisher:** ACM Press

Full text available: [pdf\(395.63 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

When a group of authors collaboratively edits interrelated documents, consistency problems occur almost immediately. Current document management systems (DMS) provide useful mechanisms such as document locking and version control, but often lack consistency management facilities. If at all, consistency is "defined" via informal guidelines, which do not support automatic consistency checks. In this paper, we propose to use explicit *formal* consistency rules for heterogeneous repositories that ...

**Keywords:** consistency in document engineering, document management, temporal logic

#### 4 **Efficient algorithms for processing XPath queries**

 Georg Gottlob, Christoph Koch, Reinhard Pichler

June 2005 **ACM Transactions on Database Systems (TODS)**, Volume 30 Issue 2

**Publisher:** ACM Press

Full text available: [pdf\(721.61 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Our experimental analysis of several popular XPath processors reveals a striking fact: Query evaluation in each of the systems requires time exponential in the size of queries in the worst case. We show that XPath can be processed much more efficiently, and propose main-memory algorithms for this problem with polynomial-time combined query evaluation complexity. Moreover, we show how the main ideas of our algorithm can be profitably integrated into existing XPath processors. Finally, we present ...

**Keywords:** Efficient Algorithms, XML, XPath

#### 5 **Database theory, technology and applications (DTTA): On using collection for**

#### **aggregation and association relationships in XML object-relational storage**

 Eric Paredede, J. Wenny Rahayu, David Taniar

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

**Publisher:** ACM Press

Full text available: [pdf\(159.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

XML data can be stored in different databases including Object-Relational Database (ORDB). Using ORDB, we get the benefit of the relational maturity and the richness of OO modeling. One modeling concept that can be captured is the collection. Collection structures frequently occur in XML documents especially in two relationship types: aggregation and association. However, very often when the data is stored in a database repository, the collection is flattened. We believe that preserving the coll ...

**Keywords:** ORDB, XML, XML schema, collection

#### 6 **XRel: a path-based approach to storage and retrieval of XML documents using**

#### **relational databases**

 August 2001 **ACM Transactions on Internet Technology (TOIT)**, Volume 1 Issue 1

**Publisher:** ACM Press

Full text available: [pdf\(264.27 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article describes XRel, a novel approach for storage and retrieval of XML documents

using relational databases. In this approach, an XML document is decomposed into nodes on the basis of its tree structure and stored in relational tables according to the node type, with path information from the root to each node. XRel enables us to store XML documents using a fixed relational schema without any information about DTDs and also to utilize indices such as the B+

**Keywords:** XML query, XPath, text markup, text tagging

## 7 Flexible consistency checking

 Christian Nentwich, Wolfgang Emmerich, Anthony Finkelstein, Ernst Ellmer  
January 2003 **ACM Transactions on Software Engineering and Methodology (TOSEM)**,  
Volume 12 Issue 1  
**Publisher:** ACM Press  
Full text available:  [pdf\(1.94 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The problem of managing the consistency of heterogeneous, distributed software engineering documents is central to the development of large and complex systems. We show how this problem can be addressed using xlinkit, a lightweight framework for consistency checking that leverages standard Internet technologies. xlinkit provides flexibility, strong diagnostics, and support for distribution and document heterogeneity. We use xlinkit in a comprehensive case study that demonstrates how design, impl ...

**Keywords:** CASE tools, consistency management, constraint checking, multiple perspectives

## 8 Accelerating XPath evaluation in any RDBMS

 Torsten Grust, Maurice Van Keulen, Jens Teubner  
March 2004 **ACM Transactions on Database Systems (TODS)**, Volume 29 Issue 1  
**Publisher:** ACM Press  
Full text available:  [pdf\(781.01 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This article is a proposal for a database index structure, the *XPath accelerator*, that has been specifically designed to support the evaluation of XPath path expressions. As such, the index is capable to support *all* XPath axes (including ancestor, following, preceding-sibling, descendant-or-self, etc.). This feature lets the index stand out among related work on XML indexing structures which had a focus on the child and descendant axes only. The index has been designed with a close ...

**Keywords:** Main-memory databases, XML, XML indexing, XPath

## 9 XML Applications: An event-condition-action language for XML

 James Bailey, Alexandra Poulovassilis, Peter T. Wood  
May 2002 **Proceedings of the 11th international conference on World Wide Web**  
**Publisher:** ACM Press  
Full text available:  [pdf\(192.02 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

XML repositories are now a widespread means for storing and exchanging information on the Web. As these repositories become increasingly used in dynamic applications such as e-commerce, there is a rapidly growing need for a mechanism to incorporate reactive functionality in an XML setting. Event-condition-action (ECA) rules are a technology from active databases and are a natural method for supporting such functionality. ECA rules can be used for activities such as automatically enforcing documen ...

**Keywords:** XML, XML repositories, event-condition-action rules, reactive functionality,

## rule analysis

10 Industrial session: XML support in relational system: Native XML support in DB2 universal database

Matthias Nicola, Bert van der Linden

August 2005 **Proceedings of the 31st international conference on Very large data bases VLDB '05**

Publisher: VLDB Endowment

Full text available: [pdf\(240.25 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The major relational database systems have been providing XML support for several years, predominantly by mapping XML to existing concepts such as LOBs or (object-) relational tables. The limitations of these approaches are well known in research and industry. Thus, a forthcoming version of DB2 Universal Database® is enhanced with comprehensive *native* XML support. "Native" means that XML documents are stored on disk pages in tree structures matching the XML data model. This avoids the ...

11 XML parsing and stylesheets: Compiling XSLT 2.0 into XQuery 1.0

Achille Fokoue, Kristoffer Rose, Jérôme Siméon, Lionel Villard

May 2005 **Proceedings of the 14th international conference on World Wide Web**

Publisher: ACM Press

Full text available: [pdf\(143.18 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

As XQuery is gathering momentum as the standard query language for XML, there is a growing interest in using it as an integral part of the XML application development infrastructure. In that context, one question which is often raised is how well XQuery interoperates with other XML languages, and notably with XSLT. XQuery 1.0 [16] and XSLT 2.0 [7] share a lot in common: they share XPath 2.0 as a common sub-language and have the same expressiveness. However, they are based on fairly different pro ...

**Keywords:** Web services, XML, XQuery, XSLT

12 UML and XML schema

Nicholas Routledge, Linda Bird, Andrew Goodchild

January 2002 **Australian Computer Science Communications , Proceedings of the thirteenth Australasian conference on Database technologies - Volume 5 CRPITS '02**, Volume 24 Issue 2

Publisher: Australian Computer Society, Inc. , IEEE Computer Society Press

Full text available: [pdf\(947.72 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

XML is rapidly becoming the standard method for sending information across the Internet. XML Schema, since its elevation to W3C Recommendation on the 2<sup>nd</sup> May 2001, is fast becoming the preferred means of describing structured XML data. However, until recently, there has been no effective means of graphically designing XML Schemas without exposing designers to low-level implementation issues. Bird, Goodchild and Halpin (2000) proposed a method to address this shortfall using the 'Objec ...

**Keywords:** DTD, UML, XML, XML Schema

## 13

◆ Research papers: storage, indexing, and system architecture: System RX: one part relational, one part XML

Kevin Beyer, Roberta J. Cochrane, Vanja Josifovski, Jim Kleewein, George Lapis, Guy

Lohman, Bob Lyle, Fatma Özcan, Hamid Pirahesh, Normen Seemann, Tuong Truong, Bert Van der Linden, Brian Vickery, Chun Zhang  
June 2005 **Proceedings of the 2005 ACM SIGMOD international conference on Management of data**

**Publisher:** ACM Press

Full text available:  pdf(426.08 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper describes the overall architecture and design aspects of a hybrid relational and XML database system called System RX. We believe that such a system is fundamental in the evolution of enterprise data management solutions: XML and relational data will co-exist and complement each other in enterprise solutions. Furthermore, a successful XML repository requires much of the same infrastructure that already exists in a relational database management system. Finally, XML query languages hav ...

**14 A fine-grained access control system for XML documents** 

 Ernesto Damiani, Sabrina De Capitani di Vimercati, Stefano Paraboschi, Pierangela Samarati  
May 2002 **ACM Transactions on Information and System Security (TISSEC)**, Volume 5 Issue 2

**Publisher:** ACM Press

Full text available:  pdf(330.60 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Web-based applications greatly increase information availability and ease of access, which is optimal for public information. The distribution and sharing of information via the Web that must be accessed in a selective way, such as electronic commerce transactions, require the definition and enforcement of security controls, ensuring that information will be accessible only to authorized entities. Different approaches have been proposed that address the problem of protecting information in a Web ...

**Keywords:** Access control, World Wide Web, XML documents, authorizations specification and enforcement

**15 Document querying and transformation: Fast structural query with application to** 

 **chinese treebank sentence retrieval**

Chia-Hsin Huang, Tyng-Ruey Chuang, Hahn-Ming Lee  
October 2004 **Proceedings of the 2004 ACM symposium on Document engineering**

**Publisher:** ACM Press

Full text available:  pdf(475.51 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In natural language processing a huge amount of structured data is constantly used for the extraction and presentation of grammatical structures in sentences. For example the Chinese Treebank corpus developed at the Institute of Information Science Academia Sinica Taiwan is a semantically annotated corpus that has been used to help parse and study Chinese sentences. In this setting users usually use structured tree patterns instead of keywords to query the corpus.

In this paper we pres ...

**Keywords:** XML, structural query, treebank

**16 Research sessions: XML I: Storing and querying ordered XML using a relational** 

 **database system**

Igor Tatarinov, Stratis D. Viglas, Kevin Beyer, Jayavel Shanmugasundaram, Eugene Shekita, Chun Zhang

June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on**

**Management of data****Publisher:** ACM PressFull text available:  [pdf\(1.38 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

XML is quickly becoming the *de facto* standard for data exchange over the Internet. This is creating a new set of data management requirements involving XML, such as the need to store and query XML documents. Researchers have proposed using relational database systems to satisfy these requirements by devising ways to "shred" XML documents into relations, and translate XML queries into SQL queries over these relations. However, a key issue with such an approach, which has largely been ignor ...

**17 xlinkit: a consistency checking and smart link generation service** 

 Christian Nentwich, Licia Capra, Wolfgang Emmerich, Anthony Finkelstein  
May 2002 **ACM Transactions on Internet Technology (TOIT)**, Volume 2 Issue 2

**Publisher:** ACM PressFull text available:  [pdf\(463.26 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

xlinkit is a lightweight application service that provides rule-based link generation and checks the consistency of distributed Web content. It leverages standard Internet technologies, notably XML, XPath, and XLink. xlinkit can be used as part of a consistency management scheme or in applications that require smart link generation, including portal construction and management of large document repositories. In this article we show how consistency constraints can be expressed and checked. We des ...

**Keywords:** Consistency management, XML, automatic link generation, constraint checking

**18 CDuce: an XML-centric general-purpose language** 

 Véronique Benzaken, Giuseppe Castagna, Alain Frisch  
August 2003 **ACM SIGPLAN Notices , Proceedings of the eighth ACM SIGPLAN international conference on Functional programming ICFP '03**, Volume 38 Issue 9

**Publisher:** ACM PressFull text available:  [pdf\(242.16 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present the functional language CDuce, discuss some design issues, and show its adequacy for working with XML documents. Distinctive features of CDuce are a powerful pattern matching, first class functions, overloaded functions, a very rich type system (arrows, sequences, pairs, records, intersections, unions, differences), precise type inference for patterns and error localization, and a natural interpretation of types as sets of values. We also outline some important implementation issue ...

**Keywords:** CDuce, XML, XML-processing, type systems

**19 Industrial papers: query processing: Native Xquery processing in oracle XMLDB** 

 Zhen Hua Liu, Muralidhar Krishnaprasad, Vikas Arora  
June 2005 **Proceedings of the 2005 ACM SIGMOD international conference on Management of data**

**Publisher:** ACM PressFull text available:  [pdf\(253.13 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#)

With XQuery becoming the standard language for querying XML, and the relational SQL platform being recognized as an important platform to store and process XML, the

SQL/XML standard is integrating XML query capability into the SQL system by introducing new SQL functions and constructs such as XMLQuery() and XMLTable. This paper discusses the Oracle XMLDB XQuery architecture for supporting XQuery in the Oracle ORDBMS kernel which has the XQuery processing tightly integrated with the SQL/XML engine ...

**20 A comprehensive approach for the development of modular software architecture**



**description languages**

Eric M. Dashofy, André van der Hoek, Richard N. Taylor

April 2005 **ACM Transactions on Software Engineering and Methodology (TOSEM)**,

Volume 14 Issue 2

**Publisher:** ACM Press

Full text available: [pdf\(3.51 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Research over the past decade has revealed that modeling software architecture at the level of components and connectors is useful in a growing variety of contexts. This has led to the development of a plethora of notations for representing software architectures, each focusing on different aspects of the systems being modeled. In general, these notations have been developed without regard to reuse or extension. This makes the effort in adapting an existing notation to a new purpose commensurate ...

**Keywords:** ArchStudio 3, Architecture description languages, XML, xADL 2.0

Results 1 - 20 of 62

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